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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,782	12/27/2000	Robert Charles Skerritt	602985.1002	4137

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EXAMINER

HAMDAN, WASSEEM H

ART UNIT	PAPER NUMBER
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2858

10

DATE MAILED: 10/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/720,782

Applicant(s)

SKERRITT ET AL.

Examiner

Wasseem H Hamdan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-13 and 15-22 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Part III - DETAILED ACTION

Amendment

1. This office action is in response to applicant's Amendment filed on 08/16/2002.
2. Claims 1-7 have been canceled and claims 8-22 have been added, as necessitated by the amendment.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation in claims 15 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8-13, 15, 18, 20 and 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable Mayell et al. (US Patent 5,701,253).

Regarding claims 8 and 22, Mayell et al. discloses a residual current detection device for detecting current imbalance [FIG. 1; column 1, lines 64-67; column 2, lines 1-8] comprising:

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a plurality of resistive shunts [FIG. 1 (12a-12c); column 3, lines 46-47 (current shunt is the same as resistive shunts)], each connected in series with each of a plurality of lines [FIG. 1 (A, B, C)] through which currents can flow to and from a load [FIG. 1 (16); column 3, lines 50].

Mayell et al. discloses the essential elements of the claimed invention. However, Mayell et al. does not explicitly disclose circuitry for detecting an imbalance between the currents flowing through the resistive shunts. Mayell et al. discloses:

1) “power meter may also include voltage measurement circuits to measure the voltages of the live wires of the power distribution circuit. In this case, the processing circuitry is operable to produce composite power measurements based on the voltage differences between the voltages at the first and second ends of the current shunts (which reflect the currents through the live wires) and the measured voltages. The voltage measurement circuits may include voltage dividers connected between the live wires and a neutral wire of the power distribution circuit” [column 3, lines 11-20].

2) determining difference between voltages and phase angle between voltage and currents [column 4, lines 40-49], and in order to determine the difference between the phase angle, and phase power between the voltage and current [column 4, lines 40-49], which technically is equivalent to a circuitry detecting any imbalance between the currents flowing through the shunts. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Mayell et al. by including circuitry for detecting an

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imbalance between the currents flowing through the resistive shunts. The skilled artisan would have been motivated to modify Mayell et al. for the purpose for obtaining the difference between current and hence determine the current leakage or residual current, and one property parameters could be derived from the other.

Regarding claims 9 and 23, Mayell et al. discloses the circuitry comprises: a voltage sensor provided for each of the resistive shunts for sensing a voltage developed across the resistive shunt and generating signals indicative of the current flowing through the resistive shunt [column 2, lines 24-56 (Transducers are also considered to be voltage sensors); column 3, lines 11-20, FIG. 3; column 3, lines 34-35; column 6, lines 47-54]; and

a processor for receiving the signals from the voltage sensors and processing the signals to detect the imbalance between the currents flowing through the resistive shunts [FIG. 1 (12 it should have been 22 instead); column 4, lines 25-49].

Regarding claims 10 and 24, Mayell et al. discloses the voltage sensor comprises an analog-to- digital converter for producing digital signals as the signals supplied to the processor [column 2, lines 24-40].

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Regarding claim 11, Mayell et al. discloses an isolation barrier through which the analog-to-digital converter is connected to the processor [column 6, lines 55-61].

Regarding claim 12, Mayell et al. discloses the resistive shunt comprises a composite strip having conductive portions at its ends and a resistive portion in the middle interconnecting the conductive portions [FIG. 6A].

Regarding claims 13, 26 and 27, Mayell et al. discloses analog to digital converter for each shunt includes a delta-sigma modulator [FIG. 2 (51a, 62a, 51b, 62b, 56c, 62c; FIG. 3 (56); column 4, lines 55-56].

Mayell et al. discloses the essential elements of the claimed invention. However, Mayell et al. does not explicitly disclose that the A/D converter produces a high frequency signal digital data stream. Mayell et al. discloses that the A/D converter modifies the streams of digital bits to remove the effect of high frequency noise [column 6, lines 62-67; column 7, lines 1-6], one which technically it is equivalent and could lead to the same results (please see court case below). One skilled in the art having the Mayell design (apparatus) would be able to obtain that A/D converter which produces a high frequency signal digital data stream. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Mayell et al. by including A/D converter produces a high frequency signal digital data stream. The skilled artisan would have been motivated to modify Mayell et al. for the purpose of

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obtaining the difference between current and hence determine the current leakage or residual current.

Apparatus is: "What it is, not what it does"

It should be emphasized that "apparatus claims must be structurally distinguishable from the prior art." MPEP 2114. In *In re Danly*, 263 F. 2d 844, 847, 120 USPQ 528, 531 (CCPA 1959) it was held that apparatus claims must be distinguished from prior art in terms of **structure** rather than **function**. In *Hewlett-Packard Co v Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), the court held that: "Apparatus claims cover what a device **is**, not what it **does**." (emphases in original). To emphasize the point further, the court added: "An invention need not **operate** differently than the prior art to be patentable, but need only **be** different" (emphases in original).

That is, in an apparatus claim, if a prior art structure discloses all of the **structural elements** in the claim, as well as their relative juxtaposition, then it **reads** on the claim, regardless of whether or not the **function** for which the prior art structure was intended is the same as that of the claimed invention.

Regarding claims 15 and 25, Mayell et al. discloses analog-to- digital converter is an integrated circuit mounted on a corresponding one of the resistive shunts [column 5, lines 52-59; FIG. 3].

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Regarding claims 18 and 20, Mayell et al. discloses means for measuring power consumption by the load [FIG. 1 (16, 22); column 3, lines 11-20] .

6. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable Mayell et al. (US Patent 5,701,253) as applied to claim 8 above, and further in view of Eckardt (US Patent 6,034,521).

Regarding claim 16, Mayell et al. discloses the essential elements of the claimed invention. However, Mayell et al. does not explicitly disclose the conductive portions are comprised of copper and the resistive portion is comprised of manganin. Eckardt discloses the conductive portions are comprised of copper and the resistive portion is comprised of manganin [FIG. 2 (8, 10); column 3, lines 48-50]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Mayell et al. by including the conductive portions are comprised of copper and the resistive portion is comprised of manganin. The skilled artisan would have been motivated to modify Mayell et al. for the purpose for obtaining a good conducting material such as the copper for, and good resistive material such as the manganin.

Regarding claim 17, Mayell et al. discloses integrated circuit further comprises a terminal connected to a voltage reference source [FIG. 5 (182)] and a second converter for providing a

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digital signal stream dependent on a voltage at one of the conductive portions of the associated resistive shunt [FIG. 5 (180)].

7. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable Mayell et al. (US Patent 5,701,253) as applied to claim 8 above, and further in view of Kito et al. (US Patent 4,734,634).

Regarding claims 19 and 21, Mayell et al. discloses the essential elements of the claimed invention. However, Mayell et al. does not explicitly disclose the actuator for performing the function of a conventional circuit breaker. Kito et al. discloses an actuator for performing the function of a conventional circuit breaker [column 1, lines 55-65]. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Mayell et al. by including the actuator for performing the function of a conventional circuit breaker. The skilled artisan would have been motivated to modify Mayell et al. for the purpose for obtaining a protection for the system.

Allowable Subject Matter

8. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Response to Arguments

9. Applicant's arguments filed on 08/16/2002 have been fully considered but they are not persuasive.

Applicant's arguments in the amendment, that the Examiner agreed to enter the amended claims from the PCT. The Examiner respectfully disagrees, may be there was misunderstanding, the examiner said that he will look into it and will give the application full consideration.

Applicant argues on page 11 that Mayell is directed to power meter. The Examiner agrees, but Mayell's power meter discloses all the applicant's claimed elements. The technical words may vary between the applicant and Mayell's, but technically means the same or one skilled in the art can derive one parameter from the other. For example, the applicant's "imbalance between the currents flowing through the resistive shunts", is the same as Mayell's:

1) measurements based on the voltage differences between the voltages at the first and second ends of the current shunts (which reflect the currents through the live wires) and the measured voltages [column 3, lines 11-20];

2) determining difference between voltages and phase angle between voltage and currents [column 4, lines 40-49], and in order to determine the difference between the phase angle, and phase power between the voltage and current [column 4, lines 40-49], which technically is equivalent to a circuitry detecting any imbalance between the current.

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Applicant argues on page 13, that using the decimation filter is not disclosed by the prior art. The Examiner agrees and claim 14 is now objected to, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant argues on page 14 that the converter is mounted on the resistive shunts. Mayell discloses that the converters are connected to the resistive shunts [column 5, lines 4-11]. That could mean electrically or and physically.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wasseem Hamdan whose telephone number is (703) 305-3968. The examiner can normally be reached Monday-Thursday from 700AM-400PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750.

The fax phone number for this Art Unit is (703)308-7722 or (703)308-7724.

Any inquiry of a general nature or relating to the status of this application should be directed to the Receptionist at (703) 305-3800.

12. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 308-7722 or (703) 308-7724, or (703) 305-3431, or (703) 305-3432 (for formal communications intended for entry, please label "FORMAL" and sign as attorney of record)

Or:

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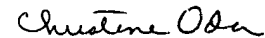
(703) 305-9724 (for informal or draft communications, please label "PROPOSED" or "DRAFT" and prominently label PLEASE DELIVER DIRECTLY TO EXAMINER)

Hand-delivered responses should be brought to Crystal Plaza 4 [fourth Floor (Receptionist)], 2201 South Clark Place, Arlington, VA. 22202.

Wasseem H. Hamdan



September 30, 2002


Christine Oda
Primary Examiner